Customer No.: 31561
Application No.: 10/711,678
Docket No.: 13605-US-PA

AMENDMENT

To the Claims:

Claim1 (Currently amended) A patterning method, comprising:

providing a substrate having a film formed over thereon;

forming a photoresist layer over the film;

exposing and developing the photoresist layer to form a patterned photoresist layer; and

etching the film by performing an anisotropic plasma etching process with a power applied at one electrode in a range of about 150W to about 300W for generating a field using the patterned photoresist layer as an etching mask at a temperature range of about –50°C to about 50°C.

Claim 2 (Original) The patterning method of claim 1, wherein the temperature range is between about –30°C and about 30°C.

Claim 3 (Original) The patterning method of claim 1, wherein the temperature range is controlled via a susceptor positioned below the substrate.

Claim 4 (Canceled).

Claim 5 (Currently amended) The patterning method of claim 1, wherein the anisotropic plasma etching process is performed by directing an ionized plasma via a the field.

Claim 6 (Original) The patterning method of claim 5, wherein the ionized plasma is formed by ionizing a plasma source comprising at least one inert gas selected from a group consisting of helium (He), neon (Ne), argon (Ar), krypton (Kr) and xenon (Xe).

Claim 7 (Original) The patterning method of claim 5, wherein a flow rate of the ionized plasma is in a range of about 20sccm to about 200sccm.

Claim 8 (Original) The patterning method of claim 6, wherein the plasma source further comprises an external plasma source.

Claim 9 (Original) The patterning method of claim 8, wherein the external plasma source comprises CF_4:CHF_3, CF_4:CH_2F_2, C_2F_6:CHF_3 or C_2F_6:CH_2F_2.

Claim 10 (Original) The patterning method of claim 9, wherein a gas flow ratio of CF_4 to CHF_3 of the CF_4:CHF_3, a gas flow ratio of CF_4 to CH_2F_2 of the CF_4:CH_2F_2, a gas flow ratio of C_2F_6 to CHF_3 of the C_2F_6:CHF_3, or a gas flow ratio of C_2F_6 to CHF_3 of the C_2F_6:CHF_3 is larger than 1.

Claim 11 (Currently amended) The patterning method of claim ~~5~~1 , wherein the field comprises an electric field or a magnetic field.

Claim 12 (Canceled)

Claim 13 (Original) The patterning method of claim 1, wherein a thickness of the patterned photoresist layer is in a range of about 200nm to about 500nm.

Claim 14 (Original) The patterning method of claim 1, wherein the photoresist layer comprises a positive photoresist layer or a negative photoresist layer.

Claim 15 (Original) The patterning method of claim 1, wherein the film comprises a single layer or multiple layers.

Claim 16 (Original) The patterning method of claim 1, wherein the film comprises a dielectric layer, an inter-metal dielectric (IMD) layer or an inter-layer dielectric (ILD) layer.

Claim 17 (Original) The patterning method of claim 1, wherein the film comprises an oxide layer, a nitride layer, a poly-silicon layer or a single crystal silicon layer.

Claim 18 (Original) The patterning method of claim 1, wherein the patterning method is performed to form a trench structure, a contact structure or a via structure in the film.

Claim 19 (Original) The patterning method of claim 17, wherein the trench structure comprises a shallow trench isolation (STI) structure.

Claim 20 (New) A patterning method, comprising:

providing a substrate having a film formed over thereon;

forming a photoresist layer over the film;

exposing and developing the photoresist layer to form a patterned photoresist layer; and

using the patterned photoresist layer as an etching mask, etching the film by performing an anisotropic plasma etching process using a plasma sources containing a perfluorinated chemical and a partially fluorinated chemical supplied at a gas flow ratio of larger than 1 at a temperature range of about –50°C to about 50°C.

Claim 21 (New) The patterning method of claim 20, wherein the perfluorinated chemical comprises CF_4 and C_2F_6, and the partially fluorinated chemical comprises CHF_3 and CH_2F_2.

Claim 22 (New) The patterning method of claim 20, wherein the plasma sources further comprises at least one inert gas selected from a group consisting of helium (He), neon (Ne), argon (Ar), krypton (Kr) and xenon (Xe).